

Preliminary experience in the treatment of hip necrosis with BIOS screws associated with growth factors

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Summary. *Introduction:* In this paper we present the preliminary results obtained in our clinic with the use of BIOS screws associated with injection of growth factors in the treatment of cephalic necrosis of the femoral head. *Materials and methods:* In the division of Orthopedics and Traumatology at Guglielmo da Saliceto" hospital in Piacenza were treated between 2012 and 2016 with the proposed technique 8 case of necrosis of the femoral head in 6 patients with a mean age of 41.8 years (between 31 and 60 years). All patients before surgery were affected by debilitating pain with VAS greater than 7 and functional limitation of the range of motion of the hip. In all patients was performed a decompression of the femoral head using cannulated screws BIOS and injection through the implants of growth factors. *Results:* Our results have been extremely positive. All patients treated at two months have reported the resolution of the pain that affected them before surgery and the recovery of the function of the hip. At the last clinical control carried out no patient experienced recurrence of any symptoms related to necrosis. *Discussion:* Cephalic necrosis due to various possible etiologies is a not so rare condition, often affecting young patients with high functional demands. Only few years ago the gold standard treatment for this kind of pathological condition was hip prosthesis and this fact was associated with long term complications related with the young age of patients. The treatment presented is simple, fast and very effective in allowing the penetration of growth factors through bony trabeculae of the femoral head, due to the fenestrations inside the screws. The results obtained in our experience are certainly promising, though longer follow-up is needed to evaluate the functional outcome long and to evaluate the possible re-emergence of pain. *Conclusion:* Conservative treatment using BIOS screws associated with growth factors in femoral head necrosis in our experience combine a low invasiveness to excellent functional results and should therefore be considered a valid option in treating this pathology in young patients. (www.actabiomedica.it)

Key words: BIOS screws, growth factors, cephalic necrosis, hip surgery, conservative surgery

Introduction

Necrosis of the femoral head is a not so rare pathology that often affect relatively young patient, providing important functional limitations and pain in active people with high functional request (1).

The most used classification was the one proposed by Ficat that, in the modified version elaborated

in 1985, recognize 5 stages in the progression of the necrosis (2).

In this work we present our preliminary experience in the conservative treatment with BIOS screws associated with the use of growth factors.

This technique is quite interesting, associating the decompression of the femoral head with a deep penetration of the growth factors in the bone.

Materials and methods

In the division of Orthopedics and Traumatology at “Guglielmo da Saliceto” hospital in Piacenza between 2012 and 2016 we treated 8 case of idiopathic necrosis of the femoral head in 6 patients with a mean age of 41.8 years (between 31 and 60 years).

4 patients were male (including the 2 bilateral) and 2 were female.

All patients before surgery were affected by debilitating pain with VAS greater than 7 and functional limitation of the range of motion of the hip.

In all patients was performed a decompression of the femoral head using a single cannulated screws BIOS associated with a perforation just superior to this one and injection through the implants of growth factors. The screw are provided with internal holes that consent the penetration of the growth factors directly in the bony trabeculae.

We performed the complete procedure in about 15 minutes in all cases.

All the patients were evaluated clinically and with x rays at 1, 3, 6 and 12 months and at last clinical control.

The results were valuated considering VAS, HHS and major complications.

Average follow up was of 27 months (from 12 to 54 months).

Results

The results obtained, although the casuistry is still small and the follow-up must be prolonged, has been very positive.

At the final clinical control available all the patients were satisfied about the procedure and none of them referred a significant pain or limitation in the range of motion of the affected hip.

The average final Harris hip score was 89 and no patient developed any relevant complication. Average VAS was 1,4 (from 1 to 3) with any patient complaining for pain during the ADL.

Discussion

Cephalic necrosis is a not so rare pathological condition with heavy consequences on the affected patients, due to their young age and high functional request.

In the last years this has been one of the field of the orthopaedic science in which the use of the new growth factors has found an important application.

In literature we find a lot of paper reporting interesting results with the use of these growth factors (3) both in animal models representing a similar condition (4) and in the clinical practice, mostly associated with a core decompression (5, 6).

The screws we used may be considered an evolution of the treatment realized by core decompression, adding to the advantages offered by this procedure the chance to offer a mechanic support and to distribute uniformly the pressure when inserting the growth factor on a wider surface, consenting a large penetration in the trabecular bone, without increasing the requested amount of time for surgery or invasiveness for the patients.

Conclusion

The conservative treatment with BIOS screws in our preliminar experience seems a valuable option for the treatment of femoral head necrosis of the I and II type according to Ficat.

This procedure combining the mechanic effect similar to the one offered by the classical procedure of core decompression with the use of growth factors directly in the bone affected by the pathological condition seems very promising, although a longer follow up and a larger casuistry must be analyzed to obtain statistically significant data.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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